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CALFEE HALTER & GRISWOLD, LLP
800 SUPERIOR AVENUE
SUITE 1400
CLEVELAND, OH 44114

EXAMINER	
SPAHN, GAY	

ART UNIT	PAPER NUMBER
3673	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/775,519	MCCOY, EDWARD	
	Examiner	Art Unit	
	Gay Ann Spahn	3673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-6 and 22-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-6, and 22-36* is/are rejected.

7)☒ Claim(s) *31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 31 is objected to because of the following informalities:

(1) claim 31, a period punctuation mark (i.e., --.--) should be inserted at the end of the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims 25-29, 31, 33, 35, and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 25, the recitation of "fiberglass rope drainage members" is vague, indefinite, and confusing as lacking antecedent basis since it is not clear if this is referring back to the drainage members recited in claims 1 and 23 on which claim 25 either directly or indirectly depends (i.e., "fiberglass rope" is not recited in either claims 1 or 23).

As to claim 26, the recitation of "the fiberglass rope drainage members" is vague, indefinite, and confusing as lacking antecedent basis since it is not clear if this is referring back to the drainage members recited in claims 1 and 23 on which claim 26 indirectly depends (i.e., "fiberglass rope" is not recited in either claims 1 or 23).

As to claim 27, the recitation of "the fiberglass rope" is vague, indefinite, and confusing as lacking antecedent basis since it is not clear if this is referring back to the drainage members recited in claims 1 and 23 on which claim 27 indirectly depends (i.e., "fiberglass rope" is not recited in either claims 1 or 23).

Further, the recitation of "the stiffening support means is selected from one or more of a small diameter wire, a plastic dowel, and a wooden dowel" is vague, indefinite, and confusing as improperly reciting a Markush group (i.e., the examiner suggests amending to --the stiffening support means is selected from a group consisting of a small diameter wire, a plastic dowel, and a wooden dowel--).

As to claim 28, the recitation of "fiberglass tape drainage members" is vague, indefinite, and confusing as lacking antecedent basis since it is not clear if this is referring back to the drainage members recited in claim 1 on which claim 28 directly depends (i.e., "fiberglass tape" is not recited in claim 1).

As to claim 29, the recitation of "the fiberglass tape drainage members" is vague, indefinite, and confusing as lacking antecedent basis since it is not clear if this is referring back to the drainage members recited in claim 1 on which claim 29 indirectly depends (i.e., "fiberglass tape" is not recited in claim 1).

As to claim 31, the recitation of "drainage members comprising fiberglass rope are inserted into the layered soil profile using a mechanical actuator through pilot holes formed by driving one or more tines into the soil using a mechanical actuator and wherein drainage members comprising fiberglass tape are inserted into the soil using a thin, reinforced metal plate" is vague, indefinite, and confusing because claim 30 (on

which claim 31 directly depends) recites fiberglass rope and fiberglass tape only in the alternative (i.e., the drainage member is either fiberglass rope "or" fiberglass tape), but claim 31 is reciting that the drainage member is both fiberglass rope and fiberglass tape (with each one being inserted in a different manner) and fiberglass rope and fiberglass tape are not used at the same time in the present invention.

As to claim 33, the recitation that "the wetable fibrous material is selected from fiberglass rope and fiberglass tape" is vague, indefinite, and confusing as improperly reciting a Markush group (i.e., the examiner suggests amending to --the wetable fibrous material is selected from a group consisting of fiberglass rope and fiberglass tape--).

As to claim 35, the recitation that "the plurality of drainage members positioned and spaced apart for one another in the layered soil profile at substantially regular intervals of about 24 inches (61 cm)" is vague, indefinite, and confusing as it should recite something similar to --each individual drainage member of the plurality of drainage members is positioned and spaced apart from adjacent drainage members in the layered soil profile at substantially regular intervals of about 24 inches (61cm)--.

As to claim 36, the recitation of "drainage members" is vague, indefinite, and confusing as lacking antecedent basis since without the word "the" or "said" before "drainage members" it is not clear that "drainage members" is meant to refer back to the drainage members introduced in claim 32.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3, 6, 22-29, 32, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCOY (U.S. Patent No. 5,219,243) in view of KNUTSON et al. (Article in Vol. 58 of Soil Science Soc. Am. Journal, entitled "Unsaturated Hydraulic Conductivities of Fiberglass Wicks and Designing Capillary Wick Pore-Water Samplers", by J.H. Knutson and J.S. Selker, published in May-June 1994 issue, pages 721-729).

As to claim 1, McCOY discloses a system for draining fluid from a layered soil profile having a sandy root zone layer above a gravel layer (Fig. 4), comprising:

a plurality of elongated porous drainage members (21) the plurality of drainage members positioned in the layered soil profile at substantially regular intervals forming an array (Fig. 5).

McCOY fails to explicitly disclose that individual drainage members comprise a length of fiberglass having a distribution of pore sizes compatible with predetermined particle sizes and fluid retention properties of the layered soil profile, and that each of the drainage members extend from the root zone layer substantially through the gravel layer to provide a substantially continuous porous pathway for draining fluid from the layered soil profile.

KNUTSON et al. discloses the use of Passive Capillary Samplers (PCAPS) using "hanging fiberglass wicks, which develop capillary tension, to draw pore-water samples from soils Fig. 1" which is a desirable sampling method having the advantage over other sampling techniques of not requiring vacuum pumps or other suction equipment because PCAPS use the natural capillary potential of porous wicks to passively drawn water from the unsaturated soil matrix across a range of pressures (see first paragraph after Abstract on page 721). KNUTSON et al. also discusses matching wick samplers to specific sites (see last paragraph on page 726 through first full paragraph on page 728 and Appendix on page 728-729 which discusses pore size).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the system for draining fluid from a layered soil profile of McCOY by replacing the vacuum system (25), piping (24) and plurality of air-pipes (21) (i.e., subsurface air-pipe system 20 of Fig. 5) with the hanging (vertical) fiberglass wick sampling system of KNUTSON et al. in order to extend a plurality of hanging fiberglass wicks from the root zone layer through the gravel layer so as to use the natural capillary potential of the porous wicks the passively draw water for the soil matrix instead of disadvantageously having to use a vacuum system to draw water.

As to claim 3, McCOY in view of KNUTSON et al. discloses the system of claim 1 as discussed above, and KNUTSON et al. also discloses that the orientation of the drainage members within said soil profile is substantially vertical.

As to claim 6, McCOY in view of KNUTSON et al. discloses the system of claim 1 as discussed above, and McCOY also discloses that the fluid to be drained is perched

water retained in one or more layers of said layered soil profile (see first full paragraph in col. 3).

As to claim 22, McCOY in view of KNUTSON et al. discloses the system of claim 1 as discussed above.

Neither McCOY nor KNUTSON et al. explicitly discloses that the drainage members are spaced about 24 inches (61 cm) from one another.

However, it is well settled that changes in size/proportion (i.e., dimension) do not constitute a patentable difference. In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

It would have been an obvious expedient for one of ordinary skill in the art at the time the invention was made to modify the system for draining fluid from a layered soil profile of McCOY in view of KNUTSON et al. by spacing the drainage members at a distance of about 24 inches or 61 cm from each other in order to have the optimum design for draining the most water since dimensions do not constitute a patentable difference.

As to claim 23, McCOY in view of KNUTSON et al. discloses the system of claim 1 as discussed above.

Neither McCOY nor KNUTSON et al. explicitly disclose that one or more of the individual drainage members are inserted into the layered soil profile through pilot holes formed by driving one or more tines into the soil using a mechanical actuator.

However, the recitation that "one or more of the individual drainage members are inserted into the layered soil profile through pilot holes formed by driving one or more tines into the soil using a mechanical actuator" is nothing more than a method limitation which effectively defines the product in terms of a process (i.e., product-by-process claim). Since McCOY in view of KNUTSON et al. discloses the final product being claimed, claim 23 is met by the combination of McCOY in view of KNUTSON et al.

As to claim 24, McCOY in view of KNUTSON et al. discloses the system of claim 23 as discussed above.

Neither McCOY nor KNUTSON et al. explicitly disclose that the mechanical actuator is a hydraulic ram.

However, the recitation that "the mechanical actuator is a hydraulic ram" is nothing more than a method limitation which effectively defines the product in terms of a process (i.e., product-by-process claim). Since McCOY in view of KNUTSON et al. discloses the final product being claimed, claim 24 is met by the combination of McCOY in view of KNUTSON et al.

As to claim 25 (and as best understood despite the 35 U.S.C. § 112, second paragraph, indefiniteness discussed above), McCOY in view of KNUTSON et al. discloses the system of claim 23 as discussed above.

Neither McCOY nor KNUTSON et al. explicitly disclose that fiberglass rope drainage members are inserted into the pilot holes using a mechanical actuator.

However, the recitation that "fiberglass rope drainage members are inserted into the pilot holes using a mechanical actuator" is nothing more than a method limitation which effectively defines the product in terms of a process (i.e., product-by-process claim). Since McCOY in view of KNUTSON et al. discloses the final product being claimed, claim 25 is met by the combination of McCOY in view of KNUTSON et al.

As to claim 26 (and as best understood despite the 35 U.S.C. § 112, second paragraph, indefiniteness discussed above), McCOY in view of KNUTSON et al. discloses the system of claim 25 as discussed above.

Neither McCOY nor KNUTSON et al. explicitly disclose that insertion of the fiberglass rope drainage members into the pilot holes is facilitated by using a stiffening support means.

However, the recitation that "insertion of the fiberglass rope drainage members into the pilot holes is facilitated by using a stiffening support means" is nothing more than a method limitation which effectively defines the product in terms of a process (i.e., product-by-process claim). Since McCOY in view of KNUTSON et al. discloses the final product being claimed, claim 26 is met by the combination of McCOY in view of KNUTSON et al.

As to claim 27 (and as best understood despite the 35 U.S.C. § 112, second paragraph, indefiniteness discussed above), McCOY in view of KNUTSON et al. discloses the system of claim 26 as discussed above.

Neither McCOY nor KNUTSON et al. explicitly disclose that the stiffening support means is selected from one or more of a small diameter wire, a plastic dowel, and a wooden dowel affixed along the axis of the fiberglass rope.

However, the recitation that "the stiffening support means is selected from one or more of a small diameter wire, a plastic dowel, and a wooden dowel affixed along the axis of the fiberglass rope" is nothing more than a method limitation which effectively defines the product in terms of a process (i.e., product-by-process claim). Since McCOY in view of KNUTSON et al. discloses the final product being claimed, claim 27 is met by the combination of McCOY in view of KNUTSON et al.

As to claim 28 (and as best understood despite the 35 U.S.C. § 112, second paragraph, indefiniteness discussed above), McCOY in view of KNUTSON et al. discloses the system of claim 1 as discussed above.

Neither McCOY nor KNUTSON et al. explicitly disclose that fiberglass tape drainage members are inserted into the soil using a thin, reinforced metal plate.

However, the recitation that "fiberglass tape drainage members are inserted into the soil using a thin, reinforced metal plate" is nothing more than a method limitation which effectively defines the product in terms of a process (i.e., product-by-process claim). Since McCOY in view of KNUTSON et al. discloses the final product being claimed, claim 28 is met by the combination of McCOY in view of KNUTSON et al.

As to claim 29 (and as best understood despite the 35 U.S.C. § 112, second paragraph, indefiniteness discussed above), McCOY in view of KNUTSON et al. discloses the system of claim 28 as discussed above.

Neither McCOY nor KNUTSON et al. explicitly disclose that the fiberglass tape drainage members are reversibly affixed to the reinforced metal plate and the assembly is driven into the soil using a mechanical actuator.

However, the recitation that "the fiberglass tape drainage members are reversibly affixed to the reinforced metal plate and the assembly is driven into the soil using a mechanical actuator" is nothing more than a method limitation which effectively defines the product in terms of a process (i.e., product-by-process claim). Since McCOY in view of KNUTSON et al. discloses the final product being claimed, claim 29 is met by the combination of McCOY in view of KNUTSON et al.

As to claim 32, McCOY discloses a system for draining fluid from a horizontally layered soil profile having a sandy root zone layer above a gravel layer (Fig. 4), comprising:

a plurality of elongated porous drainage members (21) positioned and spaced apart from one another at substantially regular intervals (Fig. 5).

However, McCOY fails to explicitly disclose that each individual drainage member comprising a length of wetable fibrous material having sufficient structural integrity to resist free fluid flow and a distribution of capillary pore sizes compatible with predetermined particle sizes and fluid retention properties of the layered soil profile, each of the drainage members extending from the root zone layer substantially through the gravel layer to provide a substantially continuous porous pathway for draining fluid from the layered soil profile.

KNUTSON et al. discloses the use of Passive Capillary Samplers (PCAPS) using "hanging fiberglass wicks, which develop capillary tension, to draw pore-water samples from soils Fig. 1" which is a desirable sampling method having the advantage over other sampling techniques of not requiring vacuum pumps or other suction equipment because PCAPS use the natural capillary potential of porous wicks to passively drawn water from the unsaturated soil matrix across a range of pressures (see first paragraph after Abstract on page 721). Fiberglass wicks are a length of fibrous material having sufficient structural integrity to resist free flow. KNUTSON et al. also discusses matching wick samplers to specific sites (see last paragraph on page 726 through first full paragraph on page 728 and Appendix on page 728-729 which discusses pore size).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the system for draining fluid from a layered soil profile of McCOY by replacing the vacuum system (25), piping (24) and plurality of air-pipes (21) (i.e., subsurface air-pipe system 20 of Fig. 5) with the hanging (vertical) fiberglass wick sampling system of KNUTSON et al. in order to extend a plurality of hanging fiberglass wicks from the root zone layer through the gravel layer so as to use the natural capillary potential of the porous wicks the passively draw water for the soil matrix instead of disadvantageously having to use a vacuum system to draw water.

As to claim 34, McCOY in view of KNUTSON et al. discloses the system of claim 32 as discussed above, and KNUTSON et al. also discloses that each individual drainage member has a diameter of about 0.64 to 2.54 cm..

As to claim 35 (and as best understood despite the 35 U.S.C. § 112, second paragraph, indefiniteness discussed above), McCOY in view of KNUTSON et al. discloses the system of claim 32 as discussed above.

Neither McCOY nor KNUTSON et al. explicitly disclose that "the plurality of drainage members positioned and spaced apart from one another in the layered soil profile at substantially regular intervals of about 24 inches (61 cm).

However, it is well settled that changes in size/proportion (i.e., dimension) do not constitute a patentable difference. In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

It would have been an obvious expedient for one of ordinary skill in the art at the time the invention was made to modify the system for draining fluid from a layered soil profile of McCOY in view of KNUTSON et al. by spacing the drainage members at a distance of about 24 inches or 61 cm from each other in order to have the optimum design for draining the most water since dimensions do not constitute a patentable difference.

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCOY (U.S. Patent No. 5,219,243) in view of KNUTSON et al. (Article in Vol.

58 of Soil Science Soc. Am. Journal, entitled "Unsaturated Hydraulic Conductivities of Fiberglass Wicks and Designing Capillary Wick Pore-Water Samplers", by J.H. Knutson and J.S. Selker, published in May-June 1994 issue, pages 721-729), as applied to claim 1 above, and further in view of GOYNE et al. (Article in vol. 64 of Soil Science Soc. Amer. Journal, entitled "Artifacts Caused By Collection of Soil Solution with Passive Capillary Samplers", by Keith W. Goyne, Rick L. Day, and Jon Chorover).

As to claim 4, McCOY in view of KNUTSON et al. discloses the system of claim 1 as discussed above.

Neither McCOY nor KNUTSON et al. explicitly disclose that that each length of fiberglass comprises at least one of fiberglass rope and fiberglass tape.

GOYNE et al. discloses the use of fiberglass rope (see page 1331, second to last sentence of last full paragraph in first column) as passive capillary samplers.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system for draining fluid from a layered soil profile of McCOY in view of KNUTSON et al. by making the length of fiberglass be fiberglass rope as taught by GOYNE et al. in order to form a woven fiberglass rope to act as a wick and thereby create a hanging water column to produce tension where the wicks contact the soil.

As to claim 5, McCOY in view of KNUTSON et al. and GOYNE et al. discloses the system of claim 4 as discussed above, and GOYNE et al. also disclose that the length of fiberglass has a diameter of about 0.64 to 2.54 cm (see page 1331, second to

last sentence of last full paragraph in first column, wherein it states that the fiberglass rope is 1.27 cm in diameter).

Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCOY (U.S. Patent No. 5,219,243) in view of KNUTSON et al. (Article in Vol. 58 of Soil Science Soc. Am. Journal, entitled "Unsaturated Hydraulic Conductivities of Fiberglass Wicks and Designing Capillary Wick Pore-Water Samplers", by J.H. Knutson and J.S. Selker, published in May-June 1994 issue, pages 721-729) and GOYNE et al. (Article in vol. 64 of Soil Science Soc. Amer. Journal, entitled "Artifacts Caused By Collection of Soil Solution with Passive Capillary Samplers", by Keith W. Goyne, Rick L. Day, and Jon Chorover).

As to claim 30, McCOY discloses a system for draining fluid from a layered soil profile having a sandy root zone layer above a gravel layer (Fig. 4), comprising:

a plurality of elongated porous drainage members (21).

However, McCOY fails to explicitly disclose that each individual drainage member comprising a length of fiberglass rope or tape having a diameter of about 0.64 to 2.54 cm, and a distribution of pore sizes compatible with predetermined particle sizes and fluid retention properties of the layered soil profile, the plurality of drainage members positioned and spaced apart from one another in the layered soil profile at substantially regular intervals of about 24 inches (61 cm), whereby each of the drainage members extends from the root zone layer substantially through the gravel layer to

provide a substantially continuous porous pathway for draining fluid from the layered soil profile.

KNUTSON et al. discloses the use of Passive Capillary Samplers (PCAPS) using "hanging fiberglass wicks, which develop capillary tension, to draw pore-water samples from soils Fig. 1" which is a desirable sampling method having the advantage over other sampling techniques of not requiring vacuum pumps or other suction equipment because PCAPS use the natural capillary potential of porous wicks to passively drawn water from the unsaturated soil matrix across a range of pressures (see first paragraph after Abstract on page 721). Fiberglass wicks are a length of fibrous material having sufficient structural integrity to resist free flow. KNUTSON et al. also discusses matching wick samplers to specific sites (see last paragraph on page 726 through first full paragraph on page 728 and Appendix on page 728-729 which discusses pore size).

GOYNE et al. disclose that PCAPS basic structure includes woven fiberglass rope (see last full paragraph on page 1330) and that the fiberglass rope has a diameter of about 0.64 to 2.54 cm (see page 1331, second to last sentence of last full paragraph in first column, wherein it states that the fiberglass rope is 1.27 cm in diameter).

None of McCOY, KNUTSON et al., and GOYNE et al. explicitly discloses that the drainage members are spaced about 24 inches (61 cm) from one another.

However, it is well settled that changes in size/proportion (i.e., dimension) do not constitute a patentable difference. In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims

was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the system for draining fluid from a layered soil profile of McCOY by replacing the vacuum system (25), piping (24) and plurality of air-pipes (21) (i.e., subsurface air-pipe system 20 of Fig. 5) with the hanging (vertical) fiberglass rope as taught by KNUTSON et al. and GOYNE et al. in order to extend a plurality of vertical fiberglass ropes from the root zone layer through the gravel layer so as to use the natural capillary potential of the porous wicks the passively draw water for the soil matrix instead of disadvantageously having to use a vacuum system to draw water and by spacing the drainage members at a distance of about 24 inches or 61 cm from each other in order to have the optimum design for draining the most perched water since dimensions do not constitute a patentable difference.

As to claim 31 (and as best understood despite the 35 U.S.C. § 112, second paragraph, indefiniteness discussed above), McCOY in view of KNUTSON et al. and GOYNE et al. discloses the system according to claim 30 as discussed above, and GOYNE et al. also discloses that the drainage members comprise fiberglass rope.

None of McCOY, KNUTSON et al., and GOYNE et al. explicitly disclose that fiberglass rope are inserted into the layered soil profile using a mechanical actuator through pilot holes formed by driving one or more tines into the soil using a mechanical

actuator and that fiberglass tape are inserted into the soil using a thin, reinforced metal plate.

However, the recitations that "fiberglass rope are inserted into the layered soil profile using a mechanical actuator through pilot holes formed by driving one or more tines into the soil using a mechanical actuator" and that "fiberglass tape are inserted into the soil using a thin, reinforced metal plate" are nothing more than method limitations which effectively define the product in terms of a process (i.e., product-by-process claim). Since McCOY in view of KNUTSON et al. and GOYNE et al. discloses the final product being claimed, claim 31 is met by the combination of McCOY in view of KNUTSON et al. and GOYNE et al.

Claims 33 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCOY (U.S. Patent No. 5,219,243) in view of KNUTSON et al. (Article in Vol. 58 of Soil Science Soc. Am. Journal, entitled "Unsaturated Hydraulic Conductivities of Fiberglass Wicks and Designing Capillary Wick Pore-Water Samplers", by J.H. Knutson and J.S. Selker, published in May-June 1994 issue, pages 721-729), as applied to claim 32 above, and further in view of GOYNE et al. (Article in vol. 64 of Soil Science Soc. Amer. Journal, entitled "Artifacts Caused By Collection of Soil Solution with Passive Capillary Samplers", by Keith W. Goyne, Rick L. Day, and Jon Chorover).

As to claim 33 (and as best understood despite the 35 U.S.C. § 112, second paragraph, indefiniteness discussed above), McCOY in view of KNUTSON et al. discloses the system according to claim 32 as discussed above.

However, neither McCOY nor KNUTSON et al. explicitly discloses that the wetable fibrous material is selected from fiberglass rope and fiberglass tape.

GOYNE et al. discloses the use of fiberglass rope (see page 1331, second to last sentence of last full paragraph in first column) as passive capillary samplers. Fiberglass is wettable and fibrous.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system for draining fluid from a layered soil profile of McCOY in view of KNUTSON et al. by making the length of fiberglass be fiberglass rope as taught by GOYNE et al. in order to form a woven fiberglass rope to act as a wick and thereby create a hanging water column to produce tension where the wicks contact the soil.

As to claim 36 (and as best understood despite the 35 U.S.C. § 112, second paragraph, indefiniteness discussed above), McCOY in view of KNUTSON et al. discloses the system of claim 33 as discussed above.

Neither McCOY nor KNUTSON et al. explicitly discloses drainage members comprising fiberglass rope are inserted into the layered soil profile using a mechanical actuator through pilot holes formed by driving one or more tines into the soil using a mechanical actuator and wherein drainage members comprising fiberglass tape are inserted into the soil using a thin, reinforced metal plate.

However, the recitation that "drainage members comprising fiberglass rope are inserted into the layered soil profile using a mechanical actuator through pilot holes formed by driving one or more tines into the soil using a mechanical actuator and wherein drainage members comprising fiberglass tape are inserted into the soil using a thin, reinforced metal plate" is nothing more than a method limitation which effectively defines the product in terms of a process (i.e., product-by-process claim). Since McCOY in view of KNUTSON et al. discloses the final product being claimed, claim 36 is met by the combination of McCOY in view of KNUTSON et al.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Various configurations of drainage systems are shown in: U.S. Patent No. 5,634,294 to Rohoza; U.S. Patent No. 5,272,910 to Everett et al.; U.S. Patent No. 3,908,385 to Daniel et al.; U.S. Patent No. 4,582,611 to Wang; U.S. Patent No. 3,740,303 to Alderson et al.; U.S. Patent No. 2,482,673 to Kjellman; U.S. Patent No. 5,094,569 to Fleming; U.S. Patent No. 5,444,950 to Kelly et al.; U.S. Patent No. U.S. Patent No. 6,089,788 to Sandanasamy; U.S. Patent No. 4,622,138 to Wager; U.S. Patent No. 6,254,308 to Cognon; U.S. Patent No. 2004/0146357 to Goughnour (see Fig. 2); U.S. Patent No. 5,190,404 to Kiyokawa et al.; U.S. Patent No. 5,800,090 to Goughnour; U.S. Patent No. 6,663,323 to Boys (See Fig. 3A); U.S. Patent No. 3,563,038 to Healy et al.; U.S. Patent No. 5,201,609 to Johnson (see Fig. 6); U.S. Patent No. 4,913,583 to Ledeuil; U.S. Patent No. 3,336,755 to Renfro; U.S. Patent No.

5,688,073 to Brodeur et al.: U.S. Patent No. 2003/0118403 to Wilkerson; U.S. Patent No. 4,062,735 to Kopp, Jr.; U.S. Patent No. 4,199,272 to Lacey; U.S. Patent No. 5,823,711 to Herd et al. (see Fig. 1); and U.S. Patent No. 5,281,332 to Vandervelde et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gay Ann Spahn whose telephone number is (571)-272-7731. The examiner can normally be reached on Monday through Thursday, 8:30 am to 7:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patricia L. Engle can be reached on (571)-272-6660. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

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GAS

Gay Ann Spahn, Patent Examiner
June 22, 2006

PATRICIA L. ENGLE
PRIMARY EXAMINER